SKETCH OF SOLUTIONS TO MOCK.

(1) Only MSNE (no pure).

call $r_i = \mathbb{P}r(R_i)$

$s_i = \mathbb{P}r(S_i)$ $\forall i =$ Gonçalo, Filipe.

$p_i = \mathbb{P}r(P_i)$.

$r_1 = 1/6$ $S_1 = 13/30$ $P_1 = 2/5$

$r_2 = 1/6$ $S_2 = 1/2$ $P_2 = 1/3$.

(2) Traffic light: assume only $\{G,W\}$ or $\{WG\}$.
could also introduce $\{WW\}$ w/ small prob.

1. $\Omega = \{GW\}, \{WG\}$

$\pi(GW) = \pi(WG) = 1/2$

$\rightsquigarrow$ For those who prefer "messages", say red / green.

2. Partitions: $\mathcal{P}_1 = \{\{GW\}, \{WG\}\}$

$\mathcal{P}_2 = \{\{WG\}, \{GW\}\}$.

3. $\sigma_1(GW) = G$ $\qquad$ $\sigma_2(GW) = W$

$\sigma_1(WG) = W$ $\qquad$ $\sigma_2(WG) = G$.

4. Check BR.

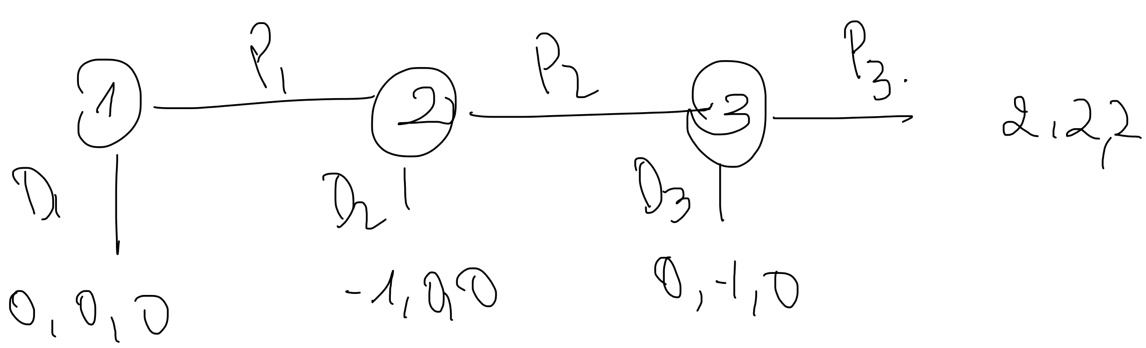
$BR_1(GW) = G$ $\qquad$ $BR_2(GW) = W$

$B_1(WG) = W$ $\qquad$ $BR_2(WG) = G$.

③ Solution: 1/3 each.

Mathematically $\max\limits_{\substack{x_1, x_2, x_3 \\ x_1+x_2+x_3=1}} \min \{x_1, x_2, x_3\}$

④



All strategy profiles:

$D_1 P_2 P_3$ $\quad$ $P_1 P_2 P_3$

$D_1 P_2 D_3$ $\quad$ $P_1 P_2 D_3$

$D_1 D_2 P_3$ $\quad$ $P_1 D_2 P_3$

$D_1 D_2 D_3$ $\quad$ $D_1 D_2 D_3$

PSNE

SPNE

SCE

SCE = NE $\cup$ $\{D_1 P_2 P_3\}$.

5.

		σ^2_H H	G
σ^1_H (1)	H	0, 0	3, 2
	G	2, 3	1, 1

(2)

$\rightarrow$ No (w/s) dom'ed strats.

$$NE = \{ (\underbrace{\sigma^1_H = 0, \sigma^2_H = 1}_{payoff_1 = 2}), (\underbrace{\sigma^1_H = 1, \sigma^2_H = 0}_{payoff_1 = 3}), (\underbrace{\sigma^1_H = \frac{1}{2}, \sigma^2_H = \frac{1}{2}}_{payoff = 1'5}) \}.$$

$$u_1(H, \sigma^2_H) = 3 - 3\sigma^2_H$$

$$u_1(G, \sigma^2_H) = 1 + \sigma^2_H$$

$$\Rightarrow \min_{\sigma^1_H \in [0,1]} \max \{ 3 - 3\sigma^2_H, 1 + \sigma^2_H \}$$

$\Downarrow$

when $\sigma^1_H = 1/2$, payoff $= 1'5$.

Pure stack:

- com. to H: $BR_2(H) = G$. payoff 3 $\rightarrow$ Pure prec. to H
- Com to G: $BR_2(G) = H$ payoff 2

mixed stack: SET TIE-BREAKING RULE: when indiff P2 plays to P1's benefit.

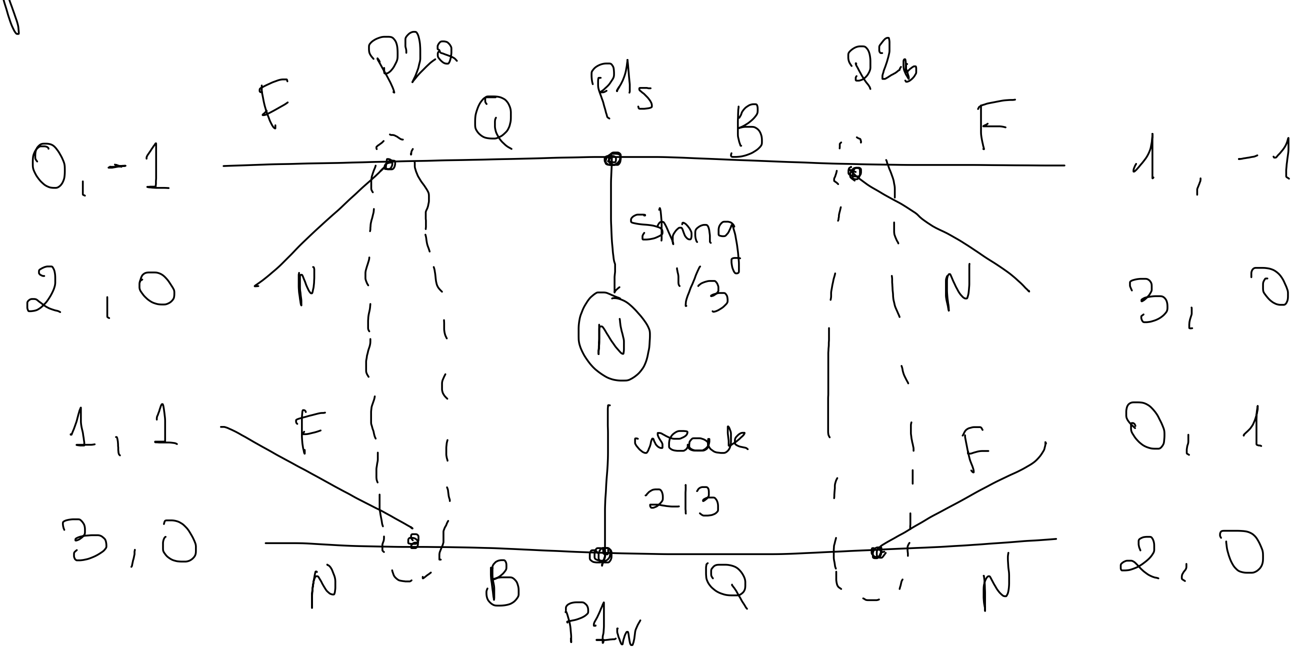
$$u_1(\sigma^1_H, BR_2(\sigma^1_H)) = 1 + 2\sigma^1_H$$

$$\sigma^1_H = \underset{\sigma^1_H \leq 1/2}{\operatorname{argmax}} \; 1 + 2\alpha^1_H = 1 \quad \text{w/ payoff } 3.$$

Best dyn. eq'n = 3 (pure + mixed Stackelberg = 3!)

This is a NE, so it's attainable for any $\delta \geq 0$.

6) Focus on pure strategies.



meal = {Q, B}.

$$BR_2(\text{meal}, \mu(s|\text{meal})) \begin{cases} F & \mu(S|\text{meal}) < 1/2 \\ \Delta\{F, N\} & \mu(S|\text{meal}) = 1/2 \\ N & \mu(S|\text{meal}) > 1/2 \end{cases}$$

$\forall$ meal = {Q, B}.

- No <u>separating</u> eq'm. (I always find that weak type would deviate).

- Given the probabilities in the question, I also find no <u>pooling</u> eq'm.

  ↳ posterior = prior : $\mathbb{P}r(S \mid \text{meal}) = 1/3 \quad \forall \text{meal} \in \{B, Q\}$.

  $BR_2\left(\text{meal}, \mu(S \mid \text{meal}) = 1/3 < 1/2\right) = F. \quad \forall \text{meal}.$

  ↓ I always find a profitable deviation.

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- Change probabilities to $2/3 = \mathbb{P}r(S)$.

Then, you should find TWO equilibria:

- both types get beer and P2 fights when quiche
- both types get quiche.

(6) $u(c_t) = \log c_t.$

$u'(c_t) = 1/c_t.$

$u''(c_t) = -\frac{1}{2} \cdot \frac{1}{c_t^2} < 0$ Risk arese

Look for perfect insurance (or consumption smoothing).

$c_t = 1/2 \cdot 0 + 1/2 \cdot 1 = 1/2.$

An unemployment scheme of this type would require perfect observability = high cost of verification when state is private information. Also, limited enforcement if it is a private agreement.